WPS 3478

Do Services and Transfers Reach Morocco's Poor?
Evidence from Poverty and Spending Maps

Dominique van de Walle*

Development Research Group, World Bank

World Bank Policy Research Working Paper 3478, January 2005

* The author thanks Sylvia Bergh, Dorothyjean Cratty, Caroline Darguel, Peter Lanjouw, Jennie Litvack, Khalid El Massnaoui, Johan Mistiaen, Hassane Nekrache and Martin Ravallion for their comments and help. Address for correspondence: World Bank, 1818 H Street, NW, Washington, DC 20433. tel: 202-473-7935, fax: 202-522 1154, dvandewalle@worldbank.org

Abstract

In the absence of household level data on participation in public programs, spending allocations and poverty measures across regions of Morocco are used to infer incidence across poor and non-poor groups and to decompose incidence within rural and urban areas separately, as well as to decompose improvements in enrolment rates across poor and non-poor children by gender. Programs appear to be well targeted to the rural poor but not to the urban poor. Substantial benefits accrue to the urban non-poor, while benefits largely bypass the urban poor. The analysis also uncovers evidence of impressive progress in primary and secondary school enrolments for the poor as well as for poor girls since 1994. However, here too, the gains are concentrated on the rural poor.

1 Introduction

In many developing countries the household level data necessary to examine the targeting, incidence, and impacts of social and poverty programs are not available. This limits the kinds of policy issues that can be examined but does not preclude distributional analysis. For example, tools based on regional level data have been developed that aim to partly resolve this serious and common data problem. They allow an assessment of the degree to which spending tends to be directed to the poor on average. Ravallion (2000) shows that targeting performance can be measured by exploiting the spatial variances in both program spending and poverty incidence across regions. The inter-regional targeting differential is estimated by regressing program allocations across regions on the regional poverty measure. If a program is effectively reaching the poor, with little leakage to the non-poor, then the overall program allocation across geographic areas will naturally be correlated with the poverty rates across the same area. Following Ravallion (2000), this property can be used to devise a measure of how well program allocations match the spatial poverty map in the form of an estimated mean difference in spending between the poor and non-poor.

This paper extends this decomposition technique in the context of a country that has heavily invested in poverty and social programs in recent years but has fallen behind best practice in terms of its monitoring and evaluation capabilities. The paper examines the distribution of spending across provinces of Morocco and how well the poor are reached by various social programs, as well as the degree to which they have participated in recent school enrolment gains. In the context of this application, the paper introduces a number of important extensions to the Ravallion method. It shows how the decomposition technique can be further disaggregated to distinguish between differences in mean spending targeted to urban poor and

non-poor groups separately from rural poor and non-poor groups. The paper also introduces systematic covariates into the method and tests for their influence on targeting performance at both the provincial level and at the urban and rural level. The same basic techniques are also applied to decomposing levels and changes in social indicators such as the enrolment rate across poor and non-poor groups. The paper further incorporates differences across gender.

Morocco is an interesting case study for a number of reasons. Like in many developing countries, there are large disparities across geographic areas of Morocco in access to basic social and infrastructure services and in quality. Past public provision of services has been uneven and has long focused on urban areas. Along with other functions, responsibility for rural infrastructure was decentralized to communes in 1976. Yet no provision was made for financing at the time. Richer communes, and possibly those belonging to richer provinces, are likely to have better provided for their populations. As communes generally lack investment budgets, little investment occurred until the 1990s when the state realized the extent of the rural infrastructure problem. Since then, there has been a concerted effort to remedy the situation through new national programs aiming to more widely provide electricity, potable water, and rural roads. A poor-area development program begun in 1996 has focused basic health, education and infrastructure investments in 14 targeted poor provinces. However, practically nothing is known about the impact of these programs, let alone their incidence or even their beneficiaries. Much of the data necessary to assess these issues at the household level are simply not available. The decomposition technique described above cannot counter these data deficiencies or answer questions concerning public spending impacts. But in the absence of any evidence on who benefits from program spending, the technique provides an important indication of what the spatial distribution of spending implies for whether the poor are being

reached by public programs. This provides a clear improvement on unsupported public assertions that programs are targeted to the poor.

For the purposes of this paper, a province level data base was constructed, reflecting to the extent possible the context in which people live and those factors relevant to explaining the geographic variability in outcomes. It contains data on access to social and physical infrastructure facilities and services, region and population characteristics, social indicators, public spending, and the incidence of certain social programs all at the provincial level. This data base is analyzed in conjunction with newly available total, urban, and rural provincial level poverty measures.

An important dimension of the geographical disparities found in Morocco is along urban and rural areas. A key question is whether public programs take such disparities into account when deciding how to allocate their spending to provinces. We don't of course know how much spending is devoted to urban and rural areas within provinces. The decomposition is extended to estimate differences in the targeting performance of social programs across urban and rural poor and non-poor groups. This is shown to result in more precise estimates than when examining provincial level aggregates and provides a different perspective on whom is being reached by public spending.

Morocco had long been singled out for its poor social indicators given its per capita income levels. Concerns have focused on its severely unequal education outcomes as reflected in large urban/rural differentials and a substantial gender gap. Amelioration in primary schooling and girls' participation in school was recorded during the 1990s, although it is unclear to what degree the poor, and poor girls in particular, participated. The decomposition is further

extended to examine differences in levels and recent changes in enrolments for the poor and non-poor by gender.

The following section describes the data base. Section 3 then turns to simple correlations across provinces to examine the degree to which poverty, social outcomes, and access to services and facilities are correlated across Morocco's provinces. Section 4 provides a descriptive picture of the distribution across provinces of spending allocations on various poverty and other programs. In section 5 a statistical decomposition analysis explores the distribution of spending allocations across poor and non-poor groups and the provincial level characteristics that influence that allocation. Section 6 repeats this separately for poor and non-poor groups in rural and urban Morocco. Section 7 then focuses on school enrolment rates and the degree to which changes since 1994 benefited the poor as well as the non-poor. It also examines changes in girls' enrolments, once again focusing on whether poor girls participated in the evidenced increase in the proportion of girls in total enrolments. Section 8 concludes.

2 The provincial level data base

The analysis is based on a province level data base of variables reflecting the context in which people live and many of the factors relevant to explaining the variability in outcomes spatially. The data base contains provincial level data on access to social and physical infrastructure facilities and services, indicators of service delivery quality, region and population characteristics, social indicators and outcome variables and public spending data on various social protection and poverty programs. Some of this information is available for two points in time, one around 1994, the time of the last census, and a more recent date in the 2000s. This allows an identification of trends and heterogeneity across provinces over time. There are

currently 71 provinces and prefectures (63 in 1994), so that working at this level already affords a great deal more geographic disaggregation than the 16 regions at which spatial analysis for Morocco has typically been conducted in the past. All monetary amounts in the data base have been converted into 2002 prices. The population in 2001 and all years in between 1994 and 2001 is based on official projections using the 1994 census.

A few caveats on the data base are in order. Due to periodic administrative boundary changes and the creation of new provinces and communes over the period of interest, the data are less complete than would be ideal for comparisons over time. In addition, there is no central data collection done in Morocco to iron out differences in how various agencies collect data. It is uncommon for data to be presented by province. There has been no effort to develop and adopt a standardized format that different ministries and data collecting agencies might use to classify and present their data. Every ministry follows a different classification prototype that accords with the way in which their budgets are managed. For example, the Ministry of Agriculture maintains data on spending across "Directions provinciales agricoles" (DPA) rather than provinces. Since each province does not have its own DPA and each DPA may cover more than one province, this means that the data are not available by province or comparable to other ministries' spending data. This is also due in part to the decentralized financing and implementation systems. We also found numerous anomalies in the data, though it is unclear where these were introduced.

The paper also makes use of poverty measures recently estimated using poverty mapping techniques that combine the 1994 census and the 1998 Morocco Living Standards Survey (MLSS) (Lanjouw 2004). The resulting poverty measures relate to 1994. They are based on

poverty lines devised by Morocco's statistics office using the cost-of-basic-needs methodology and were used in the World Bank's 2001 Poverty update (World Bank 2001).[1]

3 Regional disparities in poverty and other social indicators

In 1994, the incidence of poverty in Morocco is estimated to have been 16 percent, ranging across provinces from a low of 2 to a high of 37 percent. Urban poverty, with a mean of 11 percent, had a similar range while rural poverty was higher at a mean of 24 percent and had a larger range ─ 2 to 50 percent poverty incidence across provinces (Royaume du Maroc, 2004). Tables 1 and 2 present correlations between provincial level poverty headcount indices, social indicators and changes between 1994 and 2001 for the latter.[2] Correlations do not of course imply a causal relationship, but simply indicate whether variables move together. The first thing to note is the strong positive correlation across provinces between poverty incidence (both total and rural) in 1994, the infant mortality rate for 1997 and illiteracy in 1994 (Table 1), and the strong negative correlation between the poverty measures and the percent of the population with access to electricity (Table 2). Although the correlation with access to rural potable water is also negative, it is not significant. Similarly, the infant mortality rate (IMR) is strongly negatively correlated with the 1994 values for literacy, school enrolments, and access to electricity and rural water. Indicators of well-being thus tend to move together across provinces.

Total and rural poverty are also significantly negatively correlated with enrolments per person at all levels of education in 1994 and 2001 and with the share of girls in total enrolments

[1] The poverty lines represent 3922 and 3037 Dirhams per person per year for urban and rural areas respectively in 1998 prices.

[2] Note that in calculating correlations, rural and urban poverty are expressed as a percent of the national population to make how they are measured comparable to how other variables are measured, which is to say normalized by total rather than the urban or rural populations.

at both dates and all schooling levels (Table 1).[3] The one exception is the reversal for primary enrolments in 2001 when the per capita enrolment rate is positively correlated with poverty. This is probably the result of expressing enrolments on a per capita basis rather than because a greater proportion of poor than non-poor children now attend school. Poor, and particularly rural poor, households tend to be younger and hence more of the denominator is also in the numerator than for the non-poor or the urban population. For both primary and lower secondary school total and girls' enrolments at those levels, changes over time are also positively and significantly correlated with poverty: rural and total poverty in the case of enrolments per capita and only rural poverty for girls' enrolments. This suggests a concentration of the gains in enrolments among the poor. Correlations with urban poverty often appear counter-intuitive. Once again, this can be attributed to using population to weight these numbers.

In both 1994 and 2001, public primary schools per capita are positively and significantly correlated with total and rural poverty and negatively correlated with literacy and the share of girls in enrolments in both years. These counter-intuitive correlations — given the positive enrolment picture discussed above — may reflect the fact that there are more private schools in richer areas, more pupils in poorer areas given the younger population, and/or endogenous placement of schools where there is a particular need. The negative correlation with urban poverty appears to support this. In contrast too, the number of public lower and upper secondary schools per capita tends to be negatively correlated with the incidence of total and rural poverty across provinces. Furthermore the percentage changes in primary and secondary schools per capita are significantly negatively correlated with primary enrolments per capita in 1994, suggesting a response on the part of the public sector to build schools where the need is greatest.

[3] Because data on the number of school age children at each date and level needed to form the traditional enrolment rate are not accessible, enrolments are weighted by provincial population. The enrolment rates are thus per capita.

Table 2 shows that the higher the provincial rate of total and rural poverty, the lower the number of doctors, paramedical staff, pharmacists, and hospital beds per capita at both dates. The higher the literacy rate and share of population with electricity and safe water, the higher the numbers of such health facilities and personnel per capita. The correlations provide no evidence that changes in health related variables over time favored poorer provinces. The health sector related data are thus less encouraging about pro-poor changes than the education related data.

4 The geographic distribution of poverty programs and sector spending

In the light of the preceding discussion, it is of interest to ask whether public spending programs and their funding allocations address the large differences in endowments and other disparities evident across Morocco's provinces. Morocco has instituted a number of poverty or development focused programs in recent years. These programs are allegedly targeted to poor areas. However, until recently, income poverty data were not available at a level more disaggregated than the region. Targeting to provinces has therefore been implemented using proxies. It is of interest to see how well these programs reach poor areas now that province level poverty measures are available from the poverty mapping initiative.

One of the government's flagship poverty programs is the BAJ1 (Premier Programme de Priorités Sociales) which began implementation in 1996/97 in 14 provinces. Essentially a poor-area development program, BAJ1 relies on basic health and education, small infrastructure and employment interventions (through a Promotion Nationale component) to raise living standards in what were judged to be the poorest provinces when the program was launched. An index of unmet basic needs was constructed to select the provinces. Table 3 refers to the provinces

targeted under the BAJ1 program. The table gives each BAJ1 province's ranking in terms of poverty in 1994, education, health and infrastructure indicators.

Among the 14 BAJ1 provinces, only five rank in the poorest 14 nationally based on the headcount index obtained from the poverty mapping exercise. Nevertheless, all except one (Taroudant) are ranked among the poorest 30. The BAJ1 provinces do not appear to have been chosen on the basis of poverty in rural areas. Only three provinces are among the 14 with the highest incidence of rural poverty, while four have a lower rural poverty rate than the poorest 30. Nor were the provinces chosen on the basis of high urban poverty as can be seen in column 4.

The BAJ1 provinces do look more disadvantaged when we consider basic health, education and infrastructure indicators. A majority were among the worst off with respect to the infant mortality rate in 1997, the literacy rate, primary school enrolments, the share of girls in those enrolments, access to electricity and rural access to safe water. There is some overlap between indicators of income poverty and indicators of non-income dimensions of poverty but it is not perfect. Because a large proportion of the poor live in non participating provinces, BAJ1 can only hope to make a partial dent in poverty in Morocco even if it is having exceptional impact where it is implemented.

Does spending on other programs appear to be targeted to the poorer, less well appointed provinces? Simple correlations of the per capita amounts allocated to provinces by various spending programs against income poverty incidence reveal few significant correlations. As can be seen in Table 4, this is true whether the correlation is calculated based on the total, rural or urban province level headcount indices.[4] The BAJ1 program is the one standout. Whether focusing on its Promotion Nationale (PN) budget only or the total of the PN and education

[4] Table 4 lists public programs for years for which data on province level budget allocations were available. More detail on these programs is given in Section 5.

components, its allocation across provinces is highly positively associated with poverty, and particularly with rural poverty. Its allocations also exhibit a significant negative correlation with urban poverty ─ suggesting that it is distributed to provinces with high rural but low urban poverty. The only other significant correlations in Table 4 are for Promotion Nationale funds in 1994 and 2002. But here the relationship is negative.

Correlations only test for a linear relationship. However, data plots do not suggest any clear non-linear relationships (data plots by program can be found in World Bank (2004b)). While most program per capita allocations vary considerably from one province to another, there is no sign of a relationship with provincial poverty incidence. These simple statistics suggest little pro-poor targeting of funding allocations at the provincial level.[5]

5 Assessing the targeting performance of poverty and other development programs

Analysis of the targeting performance of poverty and other spending programs at the household level has not been feasible in Morocco because survey information on household program participation is not as yet available. It is, however, possible to analyze each program's targeting performance in reaching the poor nationally. Such an analysis can be implemented using program specific budget allocations by province matched with the disaggregated poverty measures (Ravallion, 2000). This allows an analysis of how well the geographic distribution of spending accords with the poverty map at the provincial level. This takes us a step further than the simple correlations discussed in Section 4.

The starting point is the following identity linking public spending on a particular program or sector with how much goes to the poor and to the non-poor:

[5] Alternative indicators such as illiteracy for education programs and unemployment rates for PN were also tested but the results do not support the idea that targeting is based on such (obvious) alternative indicators.

$$G_i = G_i^P H_i + G_i^{NP}(1 - H_i) \qquad (1)$$

where G_i is spending per capita in province *i*, G_i^P is spending on the poor divided by the number of the poor (i.e. per capita of the poor) and similarly G_i^{NP} is spending on the non-poor per capita, and H_i is the poverty headcount index in province *i* (% below the poverty line). Following Ravallion (2000), targeting performance is measured by exploiting the spatial variances in both spending and poverty incidence across provinces. The national means of spending on the poor ($\overline{G}^P$) and non-poor ($\overline{G}^{NP}$) are identified by re-writing (1) as

$$G_i = \overline{G}^P H_i + \overline{G}^{NP}(1 - H_i) + \varepsilon_i = \overline{G}^{NP} + (\overline{G}^P - \overline{G}^{NP})H_i + \varepsilon_i \qquad (2)$$

where $\varepsilon_i = (G_i^P - \overline{G}^P)H_i + (G_i^{NP} - \overline{G}^{NP})(1 - H_i)$. Thus $\overline{G}^P$ and $\overline{G}^{NP}$ can be interpreted as parameters of a regression of the "spending map" $(G_i, i = 1,...,n)$ on the "poverty map" $(H_i, i = 1,...,n)$ at the provincial level. The "targeting differential" (TD) — interpretable as the mean difference in spending between the poor and non-poor (i.e. $\overline{G}^P - \overline{G}^{NP}$) — can be estimated directly from this equation as the regression coefficient of G_i on H_i. The inter-provincial TD is estimated by regressing a specific program's per capita allocations across provinces on the province level poverty measures. The key assumption for this to work is that the incidence of poverty is exogenous to spending, i.e. $\text{cov}(H_i, \varepsilon_i) = 0$. Ravallion (2000) discusses this assumption further. In the present context, it can be argued that the assumption is likely to hold given that the poverty map predates the spending map.

In Ravallion (2000) the TD is estimated across local government areas within provinces, and thus provincial performance can be compared. In the present case, no information is available on within-province allocations to allow a more regionally disaggregated targeting picture. However, one can readily extend the Ravallion method to test for any systematic

covariates of targeting performance at provincial level. To see how, let G_i^P and G_i^{NP} in (1) be given by:

$$G_i^P = \alpha^P + \beta^P X_i + \nu_i^P \tag{3.1}$$

$$G_i^{NP} = \alpha^{NP} + \beta^{NP} X_i + \nu_i^{NP} \tag{3.2}$$

where X_i is a vector of province level characteristics postulated to influence program incidence. These equations are not estimable, since G_i^P and G_i^{NP} are unobserved. However, by embedding (3.1) and (3.2) in the identity given by (1) one obtains an estimable model of how the spending map varies with the poverty map, incorporating interaction effects with provincial characteristics, namely:

$$\begin{aligned} G_i &= (\alpha^P + \beta^P X_i)H_i + (\alpha^{NP} + \beta^{NP} X_i)(1 - H_i) + \varepsilon_i = \\ &\alpha^{NP} + \beta^{NP} X_i + (\alpha^P - \alpha^{NP})H_i + (\beta^P - \beta^{NP})X_i H_i + \varepsilon_i \end{aligned} \tag{4}$$

where $\varepsilon_i = \nu_i^P H_i + \nu_i^{NP}(1 - H_i)$.

Table 5 gives the mean estimated per capita Moroccan Dirham (DM) amounts going to the poor and non-poor and the estimated difference in the two — the targeting differential — for a number of different programs and years for which provincial level spending data are available. In some cases, amounts are estimated to be negative. When this occurs, the amount is set to zero and the targeting differential is calculated accordingly. From equation (2) it can be seen that if the amount going to the poor (say) is set to zero, the amount going to the non-poor is simply mean spending divided by the share of the non-poor.[6] In a few other cases, the estimated amounts going to the poor are not significantly different from zero, yet the TD is also estimated not to be significantly different from zero. It is in fact typically the case that when the null that

[6] In such cases the standard error on the non-zero amount will be zero and the t-statistic infinite. Therefore, no t-statistics are quoted.

the amount going to the poor is zero can not be rejected, it is also true that the null that it is the same amount as that going to the non-poor can not be rejected. There is unfortunately no a priori evidential basis for deciding which it is. This points to noise coming out of the differential incidence of poverty and spending across rural and urban areas as we will see in Table 7.

The results given in Table 5 are consistent with the finding reported in Table 4 that there is little correlation between per capita provincial program allocations and poverty incidence. For example, they suggest that the Promotion Nationale program ─ a public works program aimed at increasing employment and building small scale infrastructure ─ benefited the non-poor rather than the poor in both years for which budget data is on hand. Although reviews of PN reveal that a large part of the budget goes to financing permanent employment, the TD analysis gives an even starker view of the program's lack of targeting (World Bank 2002). In both 1994 and 2002, the amounts going to the poor are estimated not to be significantly different from zero. In stark contrast, PN spending allocated through the BAJ1 program is exceedingly pro-poor. On average BAJ1 spending appears to be concentrated on the poor with targeting differentials estimated to be over 600 percent higher than the per capita mean amount spent on the program. These results too are in line with BAJ1's stated objective to significantly reduce the PN budget going to permanent administrative jobs and transfer it to funding temporary employment for rural laborers (World Bank 2004a).

The PAGER rural potable water investment program for which two years of data (1995 and 2002) are also available reveals a lack of pro-poor targeting similar to the national PN program. Although the amounts estimated to go to the non-poor are significantly different from zero, the amounts going to the poor are not. Yet, this is one of the cases where the targeting differential is not significantly different from zero and so it is statistically impossible to tell

which of the two situations represents reality. There are no signs of improvements in targeting over time.

There are hints that the newly implemented demand-driven Social Development Agency (ADS) is successfully targeting poor people, though this is not conclusive given the lack of statistical significance of the estimates. Next in Table 5 are the estimated amounts for Entraide Nationale's budget for charity and old people's homes. Although the budget is small, there are clear signs that spending is pro-poor with a TD of 4 DM which is 3.3 times the mean per capita amount spent on the program. Funding under the drought prevention program (PNLCES) provides for public works employment and pasture and herd protection. Both the poor and non-poor are estimated to receive positive amounts on average, although neither the estimated amount going to the poor or the TD are statistically significantly different from zero.

The budgets allocated to NGO literacy or poverty programs do not appear to be targeted to the poor. In both cases, the estimated amounts reaching the poor are zero. The same is true of the Government's non-targeted road program (HPNRR), while its targeted road initiative (PNRR) has quite large estimated amounts going to the poor, although they are again not significantly different from zero. The budget data here consists of the total spent on each program between 1995 and 2003.[7] Allocations across provinces have not been pro-poor. The TD is not significantly different from zero. Still, it is hard to say whether none went to the poor or roughly the same went to the poor as went to the non-poor.

The health budget (net of salaries) of 1997/98, and the Ministry of education's budget for 2001, also net of salaries but separated into recurrent and investment components, can also be

[7] Targeting differentials were also estimated for the year to year spending. The results suggest that pro-poor targeting of the targeted road building program may have improved over time. The estimated mean amounts going to the poor increase, are larger than those estimated to reach the non-poor, and are significantly different from zero in 1999, 2001 and 2003. Yet, the targeting differentials are not generally significant.

tested. For the health budget, one can not reject the null hypothesis that the amounts going to the poor and the non-poor are the same; equally well, one can not reject the null that the poor got nothing. These results suggest that the health ministry's 1997/98 allocations across provinces were biased against poorer areas. By contrast, the inter-provincial distribution of the total education budget of 2001 as well as its investment component show considerable signs of pro-poor targeting. The poor receive 75 DM per person more on average than the non-poor and 64 DM more from the investment part of the budget. The recurrent budget also appears to favor poorer areas though the estimated TD is not significantly different from zero.

Finally, the results from a test of the distribution of the sum of the individual poverty program budgets for 2001 or 2002 ─ including PN, BAJ1 PN, PAGER, EN, ADS, PNLCES, PNRR, and NGO programs─ are not encouraging. The poor are estimated not to have benefited at all on average (Table 5).

It is important to note that these results are based on allocations across provinces and the extent of pro-poor geographic targeting at provincial level only. This is of course important to know as it is a key first step in targeting resources to those who need it the most. However, province-specific differences in targeting performance ─ which would require spending and poverty data at sub-provincial level such as by communes ─ cannot be identified. It is possible that within the rich provinces receiving allocations, spending is reaching the poorest groups. Alternatively, it may be non-poor households that gain the most from spending that goes to the poorest provinces. Analyses of transfer programs in other countries show that inter-regional targeting is often less pro-poor than intra-regional targeting (Alderman 2002, for Albania; Galasso and Ravallion 2004 for Bangladesh). In order to test this in the Moroccan context, we would need sub-provincial expenditure allocations.

This section has tested how well program allocations match the provincial level poverty map and estimated the mean amounts going to the poor and non-poor. Underlying those means, there is undoubtedly heterogeneity related to province specific characteristics. Allocations are influenced by considerations other than a province's incidence of poverty. For example, literacy programs may put more weight on the illiteracy rate in deciding where to distribute their resources. Programs may spend more in more urbanized areas where access and implementation is easier. Rural poverty in Morocco is related to rainfall and the risk of drought. Thus the average amount of rainfall in a province may well affect the distribution of spending on poverty programs. Elsewhere, it has been argued that higher inequality facilitates redistribution and also impedes it by reducing the relative power of the poor (for example, Mansuri and Rao, 2003; Elbers et al., 2004). To test whether such factors influence the distribution of spending to poor and non-poor groups, the regressions are rerun with the headcount index interacted with a measure of provincial level consumption inequality, the literacy rate in the case of education-related expenditures, the urbanization rate and average rainfall.[8] Interactions with the infant mortality rate were also tried but proved to have no impact.[9] The regressions are reported in Table 6.

Significant effects of these characteristics are found particularly for the BAJ1 and PN programs. For both funding components of the BAJ1, higher inequality increases, while higher rainfall and higher literacy reduce, the amounts going to the poor. This is consistent with program allocations better reaching the poor in places where income differentiation is greater

[8] Inequality ─ estimated using the poverty mapping methodology ─ is given by a general entropy class measure with parameter value of 0.5 indicating a moderate aversion to inequality among the poor. Its mean value for the country is 0.24, and 0.22 and 0.19 for urban and rural Morocco respectively. These numbers mask considerable variance across provinces whereby inequality ranges from 0.18 to 0.36 in urban and 0.09 to 0.59 in rural Morocco. Rainfall is the yearly average calculated over 6 to 30 years of observations depending on how long a weather station has been in operation. Provinces are mapped to the closest weather station.

[9] Several other potential explanatory variables were omitted because the data were missing for too many provinces.

and hence targeting easier, and being lower in provinces where the poor are favored by better rainfall and being more literate. A higher urbanization rate had no significant impact on the BAJ1 allocation to the poor. In contrast, while higher rainfall reduced PN allocations to the non-poor as well, more pronounced inequality also reduced them. The later perhaps reflects the weaker ability of the non-poor to capture benefits from a purported poverty program in provinces where high inequality makes the non-poor look even better off relative to the poor. A higher level of urbanization also significantly increased the programs' transfers to the non-poor.

Consistently across programs, one finds that higher rainfall reduced the amounts going to the non-poor. A high province level literacy rate tends to positively affect the amount of the 2001 Education budget allocated to the poor while reducing that going to the non-poor. This is consistent with a possible political response to demand on the part of more educated poor populations and a targeting away from wealthier groups who are already well-educated. A higher urbanization rate also exerts a significant positive influence on the education spending allocation going to the non-poor and a negative one on that going to the poor.

6 Urban-rural differences in targeting performance

Although Morocco is quite urbanized, with around 60 percent of the population living in urban areas in 2001, rural poverty remains deeper and widespread. Nonetheless, in its public statements, the government often appears to be more concerned with urban and peri-urban poverty. It is thus of interest to ask how the above findings on the targeting differential alter if we look instead at the distribution of program expenditures separately for the rural and urban poor and non-poor. This has to be estimated as, in addition to lacking data on how much spending is directed to the poor, how much goes to urban and rural areas is also unknown. To

investigate this issue, Ravallion's (2000) decomposition is extended to incorporate estimation of urban and rural differences across provinces. One can think of the following decomposition of total spending into that which is allocated to the rural and urban poor and non-poor (analogously to equation (2)) :

$$G_i = [\overline{G}^{PR} H_i^R + \overline{G}^{NR}(1 - H_i^R)]n_i^R + [\overline{G}^{PU} H_i^U + \overline{G}^{NU}(1 - H_i^U)](1 - n_i^R) + \varepsilon_i \qquad (5)$$

where: G_i = total per capita public spending on a program in province *i*

G^{PR} = mean spending per capita on the rural poor

G^{NR} = mean spending per capita on the rural non-poor

G^{PU} = mean spending per capita on the urban poor

G^{NU} = mean spending per capita on the urban non-poor

H_i^R = rural headcount index in province i

H_i^U = urban headcount index in province *i*

n^R = rural population share

To estimate equation (5), provincial per capita spending allocations are regressed on the provincial rural and urban headcount indices. Table 7 presents the estimated mean amounts going to the rural poor and non-poor along with the associated targeting differential for rural areas across provinces, and the same for urban areas.

Table 7 reveals a more nuanced, though not entirely different picture of regional targeting than was apparent in Table 5. The striking finding that is exposed by this method of decomposing public spending is the large difference between allocations accruing to the rural and urban poor. The estimations suggest that budget allocations are generally well-targeted to the rural poor. For a majority of programs, the amounts estimated to go to the rural poor are large and significant. This can be seen by comparing the mean estimated amounts with each program's mean overall per capita allocations given in Table 5.

By contrast, the results suggest that the urban poor do not benefit. In urban areas, the non-poor tend to get the lion's share of spending. There are no programs with significant

estimated amounts going to the urban poor. Similarly, none of the amounts estimated to go to the rural non-poor are significantly different from zero with the exception of the education budget (significant at the 10% level). In addition, the estimated average Dirham amounts going to the rural poor tend to be larger than those going to the urban well-off. From this point of view, the programs appear particularly well targeted to high rural poverty provinces.

Of interest from a methodological point of view is that the targeting differentials ─ favoring the poor within rural areas and favoring the well-off in urban areas ─ as well as the estimated amounts going to the rural poor and urban non-poor tend to be more precisely estimated and more often significantly different from zero than the estimates in Table 5. This points to the importance of making the urban rural distinction in assessing how well targeted budgetary allocations are across provinces in Morocco.

In rural areas, BAJ1, PAGER in both years, NGO poverty initiatives, the targeted road building program, the health and education budgets as well as the aggregate sum of the foregoing poverty targeted programs have targeting differentials favoring the poor that are significant at the 20 % level or higher. This suggests a somewhat different picture to that given by Table 5 where these were generally imprecisely estimated. Furthermore, looking inside the urban sector, provincial allocations are estimated to significantly favor the non-poor for every single program other than the BAJ1 and the education budget of 2001 and its components. So while targeting is pro-poor in rural provinces, it is often pro-non-poor in urban areas for the same programs.

Of all the spending programs reviewed, a majority are estimated to significantly benefit both the rural poor and the urban non-poor, with estimated average Dirham amounts typically larger for the former. This suggests a political economy imperative of leaking some benefits to urban elites whose taxes most likely fund many programs in order to concentrate the rest of the

benefits on the poorest of the poor ─ those in rural Morocco. The exceptions include spending on PN that is not channeled through BAJ1, NGO literacy programs whose benefits are estimated to reach solely the urban non-poor, and BAJ1.

BAJ1 is found to be very pro-poor. It is the only program for which the decompositions are consistent with the entire funding allocation going to the rural poor in the targeted provinces. Based on this evidence, BAJ1 appears to be meeting its pro-poor objectives. But what proportion of the poor does the program reach? Based on the 1994 poverty estimates, the 14 BAJ1 provinces contain about 37 percent of Morocco's total poor, and 48 percent of its rural poor. Therefore, although the BAJ1 potentially helps close to half of Morocco's rural poor, the other half live in other provinces. Furthermore, 63 percent of Morocco's total poor are not covered. It is clearly important to keep in mind that although BAJ1 is well targeted to the rural poor, many of the country's poor are not covered by the program.

As noted earlier, there may be systematic characteristics of a province's urban or rural areas that affect the amounts going to the poor and non-poor within those areas. It is therefore of interest to attempt a breakdown of the means to see how they may be influenced by such factors. As before, this is tested by adding interactions of the shares of rural poor and non-poor and urban poor and non-poor with the 1994 inequality and urbanization rates, average rainfall per year and the literacy rate.

For many poverty related programs, the results suggest that a higher urbanization rate affects the funding allocations going to the urban non-poor (Table 8). For the most part it exerts a positive influence ─ namely for PN, targeted roads, NGO poverty programs and the poverty program aggregate. Entraide Nationale and the health budget ─ for which the effect is negative ─ are exceptions. By contrast, the urbanization rate for the most part had no effect on the

amounts going to the rural poor. Here the exceptions are a negative impact on Entraide Nationale and NGO poverty allocations. A higher literacy rate and more rainfall significantly reduced the amounts going to the urban non-poor. Higher inequality had no discernible impact on allocations to the non-poor.

As before, BAJ1 allocations to the rural poor were significantly lower where literacy was more prevalent. This again points to the targeting of BAJ1 to the rural poor in the worst off provinces. By contrast, higher inequality significantly increased BAJ1 amounts to the rural poor. The level of consumption inequality also positively affected allocations to the rural poor under the drought prevention program (in 2002) while it simultaneously put downward pressure on that going to the rural non-poor. Exactly the reverse pattern is found for the education budget, where higher inequality exerted a negative effect on amounts to the rural poor and positive effect on that to the rural non-poor. In contrast to that found for BAJ1, higher literacy increased the amount going to the rural poor from the Social Funds and NGO poverty funds.

7 Explaining the change in school enrolments between 1994 and 2001

Morocco experienced notable improvements in its enrolment rates during the 1990s. This can be seen for 1994 and 2001 in the first column of Table 9. There was also a large variance across provinces. What can be said about the distribution of these changes? Did the poor in urban and rural areas and poor girls in both sectors participate in those gains? The same basic decomposition techniques used above are adapted to examine this issue with respect to total enrolments and the share of girls in enrolments in 1994 and 2001, as well as to the changes in the enrolment density and the share of girls between those dates. As mentioned, the date

specific province level population is used as the denominator. The resulting ratio is referred to as the "enrolment density."

The decomposition of the change in enrolments takes the following form:

$$\frac{E_{it}}{N_{it}} - \frac{E_{it-1}}{N_{it-1}} = \left(\frac{\overline{E_t^P}}{N_t^P} - \frac{\overline{E_{t-1}^P}}{N_{t-1}^P}\right)H_{it-1} + \left(\frac{\overline{E_t^{NP}}}{N_t^{NP}} - \frac{\overline{E_{t-1}^{NP}}}{N_{t-1}^{NP}}\right)(1 - H_{it-1}) + \upsilon_{it}, \qquad (6)$$

where E_{it} is the number of children enrolled in period t and province i, N_{it} is population in period t and province i, H_{it} is the headcount index in province i, superscripts P and NP refer to the poor and the non-poor, and the bars denote means over all provinces at a given date. The Appendix discusses the derivation of (6), the properties of the error term and the stronger assumptions needed for the decomposition to be valid.

Table 9 starts by decomposing total enrolments for each date into that accounted for by the poor and that accounted for by the non-poor. Primary school enrolments per poor person were extremely low in 1994 at 0.07 compared to 0.13 per non-poor person. But this had changed dramatically by 2001 with the per capita rate rising to 0.18 for the poor. By contrast, the rate had hardly changed at all for the non-poor. Note that the higher density for the poor than for the non-poor probably reflects the younger nature of the poorer population, rather than a higher primary enrolment rate for the poor. At the lower and upper secondary levels, the poor appear to participate very little at either date. (The estimated enrolment by the poor in lower secondary school is not significantly different from zero.) For the non-poor there was an increase in the rate of children per capita attending upper secondary school.

Results are given for the 1994 to 2001 change in enrolments at different levels of schooling in Table 10. Column 1 shows the simple overall decomposition for enrolments in primary education. The change over time was highly correlated with poverty. The results are

consistent with a situation whereby non-poor children who were virtually all already enrolled in 1994 stayed enrolled, while gains in enrolments are fully due to more poor children attending primary school. Column 2 attempts to explain the deviations around the estimate and explore what may be some systematic correlates of this change. Since there is no change for the non-poor, the regression drops all variables concerning the non-poor and includes possible determinants of the change in enrolments interacted with the poverty rate. An interaction of inequality with poverty suggests that gains in primary school enrolments were more pro-poor in provinces with higher levels of inequality. BAJ1 per capita spending from 1996 to 2001 is included not interacted with poverty to reflect the earlier result that such benefits accrue entirely to the poor. Hence, the variable can be interpreted as BAJ1 spending per poor person. Indeed, BAJ1 is found to have had a significant positive effect on poor children's primary school enrolments.[10] Also included in interacted form are the Ministry of Education's budget for 2001 ─ with no discernible impact ─ and the number of primary and lower secondary schools per capita in the base year.[11] The per capita level of primary schools is found to have a significant negative effect on the change in the poor's enrolments. This is likely to be picking up an endogeneity effect reflecting the fact that in places that had more schools initially, enrolment rates were probably higher and so their gains were lower than in places where there were fewer schools initially. Another highly significant determinant of improving enrolments for the poor appears to be the number of students benefiting from the school meals program (cantines scolaires). Finally, the urbanization and literacy rates and the amount of rainfall are also interacted with poverty incidence. The two last have significant negative effects consistent with

[10] BAJ1 is targeted to where enrolments are low initially rather than to where enrolments are going to increase and hence can be treated as exogenous even though the variable is for a time after 1994.

[11] Although the education budget is for a late year, it is likely not to vary much from year to year and so it is included as an indication of the distribution of such spending.

a convergence story of enrolments improving less where literacy was high initially and where higher rainfall made people better off.

In sum then, the results are consistent with a process of convergence in primary school enrolment rates with the poor catching up during this period. BAJ1 spending per poor person was clearly more important than education spending in explaining the positive changes for the poor at this level of schooling. In further decomposing these enrolments by urban and rural groups of poor and non-poor, it is clear that these gains were fully concentrated on the rural poor.[12] The rural poor in places with higher inequality, BAJ1, and school meals participation saw higher gains while those in places with higher levels of rainfall, initial literacy and schools per capita, saw lower overall gains.

For lower secondary school enrolments (column 3), the bulk of gains are also explained by gains to the enrolments of poor children, though here, the estimate is not significant. Furthermore, the determinants of this change are much less clear and none are statistically significant beyond the 20% level. Column 4 reports the results from the same regression as in column 2 for the second level of schooling. Among the weakly significant regressors, there is again evidence that school meals and BAJ1 had positive impacts. For this schooling level, the education budget also appears to have helped. Among the poor, it was the rural poor that saw the gains and these were affected by both the education budget and school meals incidence.

Finally, at the upper secondary level, the decomposition indicates no change in enrolments for the poor and a very low, though quite significant, estimate of change for the non-poor. The regression is therefore rerun with only the non-poor interacted with other variables. At this level of education, non-poor enrolments were significantly higher in places with more

[12] The rural/urban regressions explaining the changes in primary, lower and upper secondary school enrolments are not shown for space considerations.

pronounced inequality, higher education spending per capita, higher per capita participation in school meals programs as well as higher urbanization rates. The higher the initial number of lower secondary schools per capita, the lower the enrolment changes of the non-poor at the upper secondary level. As before, this points to a likely endogeneity of placement issue. A decomposition of the change in this enrolment level across urban and rural poor and non-poor suggests that the changes are attributable to the rural poor and the urban non-poor.

The period under examination also saw large gains to girls' enrolments. The change in the share of girls in total enrolments at different schooling levels can be examined in the same fashion. Table 11 stars with a decomposition of the share levels. It shows that in 1994 poor girls accounted for about a quarter of enrolments among the poor. By 2001, this had increased to a striking 39 percent. Non-poor girls, who in the initial period accounted for 43 percent, also saw an increase to nearly half of total non-poor enrolments. This shows impressive progress, especially given how pro-poor the changes were. Decomposing the changes in the enrolment share suggests a mean increase in the poor girls' share of 0.14 and of 0.05 for non-poor girls. Further decomposing the latter by urban and rural groups indicates significant changes for the rural poor and non-poor girls as well as for non-poor urban girls. By far the largest change was registered for poor rural girls. But, no changes attributable to poor urban girls are found.

There were also improvements in the share of girls in total enrolments at higher education levels. The share of poor girls in lower secondary school was so low in 1994 as to be insignificant (Table 11). It had increased by 2001, though the decomposition suggests that the share was still not significantly different from zero. Yet the change regression suggests a small but weakly significant mean increase of 0.1 in the share for poor girls. Non-poor girls, on the other hand, figured more prominently in lower secondary than in primary school enrolments in

1994 at a mean of 47 percent of total non-poor enrolments. This significantly increased to just over half in 2001. Estimates of the urban/rural poor/non-poor breakdown of the change in the girls' share are not significantly different from zero. Finally, at the upper secondary level, again most of the action was due to the participation of non-poor girls – both in the initial period and in the estimated change over time. This is found to be entirely attributable to girls' enrolments for the urban non-poor.[13]

8 Conclusions

It is often the case that a household survey did not ask about participation in key social programs. This paper has used a method of inferring program incidence that is feasible in such cases. The paper has examined the geographic aspects of poverty and social outcomes in Morocco and the responsiveness of public programs and spending to that geographic heterogeneity. In the absence of household level data on participation in public programs that would allow an analysis of targeting at the household level, the analysis here has focused on what can be said about the targeting of various public programs across poor and non-poor groups using poverty and spending maps. The key testable implication of pro-poor targeting is that spending levels across areas should be correlated with poverty measures. The paper also decomposed school enrolment rates and changes in enrolments over time across poor and non-poor groups.

An important dimension of Morocco's geographic heterogeneity is across urban and rural areas within provinces. The decomposition methodology has enabled estimation of the average spending amounts that are allocated to poor and non-poor groups within rural and urban areas

[13] Further breakdown of these means to explore systematic differences across provinces is not useful because the heterogeneity in the change in the shares is too low for estimation.

separately. The same technique is also applied to total and girls' enrolment rates. In both applications, a comparison of the national with the urban/rural results finds the latter to be more precisely estimated as well as more instructive.

The analysis uncovers a number of strong and robust results concerning the performance of poverty-related public spending in reaching Morocco's poor. It is clear that across poverty-related programs, allocations of per capita spending to provinces have negligible if any relationship to provincial poverty rankings. However, this is deceptive. When provinces are split between urban and rural areas stronger correlations appear. The programs covered here appear well targeted to the rural poor but not to the urban poor. Indeed, the findings point to substantial benefits accruing to the urban non-poor, while largely bypassing the urban poor. An important caveat to these results is that there may be spending programs that are not covered here that are specifically targeted to the urban poor.

The analysis also revealed evidence of impressive progress in primary and secondary school enrolments for the poor as well as for poor girls since 1994. However, here too, the gains are found to have been concentrated on the rural poor while the urban poor appear not to have particularly benefited. Of course, the paper is unable to say whether increases in school enrolments have translated into improved school outcomes such as test scores, grade completion, literacy and skills.

Finally, the analysis suggests that Morocco's poor-area development program ─ BAJ1 ─ is well targeted to the rural poor. The evidence also points to the impact of BAJ1 on the gains in the primary enrolment rate of the rural poor and increases in the share of poor girls in those enrolments. Although BAJ1 is concluded to successfully target the poor, the paper also stresses that the program is implemented in provinces that cover at most only half of the country's rural

poor and under 40 percent of its total poor. Furthermore, good targeting does not imply high impacts.

The results reported here must be seen as preliminary and only indicative of likely targeting performance. They need to be rigorously investigated and assessed using household level information on program participation. This is necessary both for ascertaining how well the decomposition techniques work in the absence of household level data, but also to permit focus to switch to assessing program impacts rather than just targeting performance. For these reasons, it is imperative that countries such as Morocco collect the appropriate household level information to assess the cost-effectiveness of its poverty and social programs and to feed into policy reform.

Appendix

Analogously to equations (1) and (2), enrolments can be decomposed as follows:

$$\frac{E_{it}}{N_{it}} = (\frac{\overline{E_t^P}}{N_t^P})H_{it} + (\frac{\overline{E_t^{NP}}}{N_t^{NP}})(1 - H_{it}) + \varepsilon_{it} \quad \text{(A1)}$$

where E_{it} is the number of children enrolled in period *t* and province *i*, N_{it} is population in period *t* and province *i*, H_{it} is the headcount index in province *i*, and superscripts *P* and *NP* refer to the poor and the non-poor, and the bars denote means over all provinces at a given date. This can be rewritten as:

$$\frac{E_{it}}{N_{it}} = (\frac{\overline{E_t^P}}{N_t^P})H_{it-1} + (\frac{\overline{E_t^{NP}}}{N_t^{NP}})(1 - H_{it-1}) + \nu_{it} \quad \text{(A2)}$$

where,

$$\nu_{it} = \varepsilon_{it} + [(\frac{\overline{E_t^P}}{N_t^P}) - (\frac{\overline{E_t^{NP}}}{N_t^{NP}})]\Delta H_{it} \quad \text{(A2.1)}$$

Lagging (A1) one period gives:

$$\frac{E_{it-1}}{N_{it-1}} = (\frac{\overline{E_{t-1}^P}}{N_{t-1}^P})H_{it-1} + (\frac{\overline{E_{t-1}^{NP}}}{N_{t-1}^{NP}})(1 - H_{it-1}) + \varepsilon_{it-1} \quad \text{(A3)}$$

Subtracting (A3) from (A1) gives the following decomposition of the change in enrolments:

$$\frac{E_{it}}{N_{it}} - \frac{E_{it-1}}{N_{it-1}} = (\frac{\overline{E_t^P}}{N_t^P} - \frac{\overline{E_{t-1}^P}}{N_{t-1}^P})H_{it-1} + (\frac{\overline{E_t^{NP}}}{N_t^{NP}} - \frac{\overline{E_{t-1}^{NP}}}{N_{t-1}^{NP}})(1 - H_{it-1}) + \upsilon_{it}, \quad \text{(A4)}$$

where,

$$\upsilon_{it} = \Delta\varepsilon_{it} + [(\frac{\overline{E_t^P}}{N_t^P}) - (\frac{\overline{E_t^{NP}}}{N_t^{NP}})]\Delta H_{it} \quad \text{(A4.1)}$$

Using OLS to estimate the regression coefficients in (A4) requires the additional assumption that the unobserved changes over time in H_{it} are uncorrelated with their initial values

(cov($H_{it} - H_{it-1}, H_{it-1}$)=0). This is clearly a stronger assumption than required for the levels decompositions used so far. Either (unconditional) convergence or divergence will impart a bias in the decomposition based on OLS estimates of (A4). However, given that we only have a poverty map for one date in time the assumption is untestable.

References

Alderman, Harold, 2002, "Do Local Officials Know Something We Don't? Decentralization of Targeted Transfers in Albania," *Journal of Public Economics* 83: 375-404.

Elbers, Chris, Peter F. Lanjouw, Johan A. Mistiaen, Berk Ozler, and Ken Simler, 2004, "On the Unequal Inequality of Poor Communities," *World Bank Economic Review* 18(3):

Galasso, Emanuela and Martin Ravallion, 2005, "Decentralized Targeting of an Anti-Poverty Program," *Journal of Public Economics*, forthcoming.

Lanjouw, Peter, 2004, "The Geography of Poverty in Morocco: Micro-Level Estimates of Poverty and Inequality from Combined Census and Household Survey Data," unpublished manuscript, DECRG World Bank, Washington, DC

Mansuri, Ghazala and Vijayendra Rao, 2004. "Community Based (and Driven) Development: A Review," *World Bank Research Observer* 19(1): 1-39.

Ravallion, Martin, 2000, "Monitoring Targeting Performance When Decentralized Allocations to the Poor are Unobserved," *World Bank Economic Review* 14(2): 331-45.

Royaume du Maroc, 2004, « Carte de la Pauvreté Communale, » Haut Commissariat au Plan, Rabat, Morocco.

World Bank, 2001, "Kingdom of Morocco: Poverty Update," Middle East and North Africa, Report No. 21506-MOR, World Bank, Washington, D.C.

_____, 2002, "Kingdom of Morocco: Social Protection Note," Middle East and North Africa Human Development Group, Report No. 22486-MOR, World Bank, Washington, D.C.

_____, 2004a, "Implementation Completion Report: Social Priorities Program," Report No. 28058-MOR, World Bank, Washington, D.C.

_____, 2004b, "Kingdom of Morocco Poverty Report: Strengthening Policy by Understanding the Geographic Dimension of Poverty," Social and Economic Development Group Middle East and North Africa Region, Report No. 28223-MOR, World Bank, Washington, D.C.

Table 1: Correlations between provincial level poverty, social and education facility indicators 1994 to 2001

	poverty 1994	rural poverty 1994	urban poverty 1994	IMR 1997	literacy rate 1994	primary enrolment per capita 1994	share of girls in primary 1994
rural poverty	0.74*	1.00					
urban poverty	0.42*	-0.43*	1.00				
IMR 97	0.52*	0.55*	-0.11	1.00			
literacy 94	-0.63*	-0.85*	0.27*	-0.62*	1.00		
enrolments per cap:							
primary: 1994	-0.27*	-0.57*	0.30*	-0.26*	0.49*	1.00	
2001	0.29*	0.27*	0.07	0.24	-0.26*	0.14	-0.14
% change	0.34*	0.65*	-0.34*	0.42*	-0.70*	-0.75*	-0.42*
share girls 94	-0.34*	-0.72*	0.39*	-0.25	0.61*	0.29*	1.00
share girls 01	-0.44*	-0.52*	0.20	-0.44*	0.72*	0.34*	0.55*
% change	0.21	0.66*	-0.37*	0.12	-0.41*	-0.22	-0.92*
enrolments per cap:							
lower sec: 1994	-0.50*	-0.73*	0.34*	-0.43*	0.82*	0.73*	0.47*
2001	-0.37*	-0.66*	0.19	-0.38*	0.60*	0.67*	0.56*
% change	0.31*	0.38*	0.57*	-0.15	-0.08	-0.40*	-0.21
share of girls 94	-0.47*	-0.75*	0.36*	-0.46*	0.78*	0.26*	0.63*
share of girls 01	-0.45*	-0.73*	0.29*	-0.50*	0.74*	0.37*	0.70*
% change	0.19	0.35*	-0.21	0.15	-0.39*	0.04	-0.34*
enrolments per cap:							
upper sec: 1994	-0.49*	-0.67*	0.26*	-0.44*	0.80*	0.59*	0.32*
2001	-0.36*	-0.68*	-0.01	-0.44*	0.46*	0.52*	0.51*
% change	-0.06	0.19	-0.14	0.06	-0.18	-0.28*	-0.04
share of girls 94	-0.40*	-0.58*	0.31*	-0.39*	0.66*	0.09	0.46*
share of girls 01	-0.27*	-0.46*	0.29*	-0.40*	0.68*	0.26*	0.52*
% change	0.14	0.22	-0.16	0.10	-0.28*	0.11	-0.18
primary schools pc:							
1994	0.61*	0.77*	-0.34*	0.66*	-0.83*	-0.22	-0.65*
2001	0.53*	0.72*	-0.31*	0.73*	-0.78*	-0.33*	-0.58*
% change	0.15	0.14	-0.04	0.34*	-0.13	-0.27*	0.11
lower sec schools							
pc: 1994	-0.36*	-0.50*	0.12	-0.15	0.48*	0.46*	0.33*
2001	-0.18	-0.34*	0.15	-0.01	0.24	0.36*	0.35*
% change	0.09	0.27	-0.22	0.11	-0.30*	-0.26*	-0.22
upper sec schools							
pc: 1994	-0.38*	-0.38*	0.10	-0.14	0.41*	0.26*	0.35*
2001	-0.30*	-0.25	-0.07	0.00	0.31*	0.26*	0.38*
% change	-0.04	0.03	-0.11	0.07	0.02	-0.06	0.00

Note: * indicates significance at the 5 % level. Correlations are calculated for variables across 63 to 71 provinces depending on the variable and date. Enrolments refer to the number of private and public students. Rural and urban poverty are expressed as a percent of the national population rather than the urban or rural populations.

Table 2: Correlations between provincial level poverty, social and health facility indicators 1994 to 2001

	poverty 1994	rural poverty 1994	Urban poverty 1994	IMR 1997	literacy rate 1994	% pop with electricity 1994	% pop with rural water 1994
rural poverty	0.74*	1.00					
urban poverty	0.42*	-0.43*	1.00				
% with electricity 94	-0.47*	-0.67*	0.28*	-0.44*	0.78*	1.00	0.31*
% with rural water 94	-0.19	-0.22	0.18	-0.38*	0.38*	0.31*	1.00
doctors pc:							
1994	-0.23	-0.32*	0.25	-0.31*	0.46*	0.48*	0.29
2001	-0.28*	-0.26*	-0.00	-0.33*	0.43*	0.28*	0.22
% change	-0.12	-0.03	-0.25	-0.01	-0.03	-0.24	-0.10
pharmacists pc:							
1994	-0.47*	-0.54*	0.27*	-0.47	0.69*	0.47*	0.23
2001	-0.45*	-0.60*	0.42*	-0.40*	0.69*	0.50*	0.30
% change	0.22	0.22	-0.29	0.33*	-0.26	-0.19	0.07
paramedics pc:							
1994	-0.17	-0.28*	0.47*	-0.13	0.41*	0.55*	0.26
2001	-0.37*	-0.27*	-0.03	-0.11	0.43*	0.42*	0.27
% change	-0.04	0.16	-0.42*	-0.02	-0.18	-0.39*	-0.05
hospital beds pc:							
1994	-0.33*	-0.35*	0.11	-0.24	0.51*	0.45*	0.35*
2001	-0.34*	-0.30*	0.06	-0.20	0.48*	0.49*	0.32*
% change	0.04	0.07	-0.27	0.07	-0.16	-0.15	-0.17
health facilities pc:							
1994	0.26	0.08	0.05	0.38*	-0.21	-0.31*	-0.04
2001	0.14	0.51*	-0.30*	0.66*	-0.37*	-0.24*	0.11
% change	0.18	0.33	-0.24	0.34*	-0.38*	-0.17	-0.15

Note: * indicates significance at the 5 % level. Correlations are calculated for variables across 63 to 71 provinces depending on the variable and date. Health facilities refers to hospitals, dispensaries and health clinics that are part of the public "Soins de santé de base réseau. " Rural and urban poverty are expressed as a percent of the national population rather than the urban or rural populations.

Table 3: BAJ province rankings in terms of various poverty and social indicators in 1994

	Poverty rankings 1994 (1=highest)			Health rankings		Education Rankings 1994 (1=lowest)			Infrastructure rankings 1994 (1=lowest)	
BAJ provinces	Total	Rural	Urban	IMR (1997) (1=highest)	Doctors per capita (1=lowest)	Literacy rate	Primary school enrolments	Share of girls in enrolments	% with electricity	% Rural access to water
Al Haouz	16	27	36	21	--	2	5	4	5	--
Al Hoceima	28	30	58	9	20	15	21	19	21	15
Azilal	14	23	37	3	2	4	6	6	10	10
Chefchaouen	2	6	51	7	10	8	3	11	6	2
Chichaoua	5	10	27	5	--	1	1	3	3	--
Essaouira	8	14	32	13	12	3	4	5	8	6
El Kelaa Sraghna	23	34	31	43	8	5	7	12	9	42
Ouarzazate	22	28	46	16	16	13	63	10	26	31
Safi	29	26	28	33	22	21	12	21	54	3
Sidi Kacem	19	33	7	39	17	19	25	17	13	13
Taroudant	41	51	40	10	7	6	13	8	11	14
Taza	21	29	21	15	21	16	29	14	19	22
Tiznit	24	32	54	4	14	11	26	9	15	7
Zagora	13	21	29	--	--	69	--	--	12	33

Note: -- denotes data is missing.
The rankings are based on all of Morocco's provinces.

Table 4: Correlations between provincial level poverty in 1994 and public program spending allocations

		Poverty	Rural poverty	Urban poverty
1	Promotion national 1994	-0.33*	-0.26*	-0.02
2	Promotion national 2002	-0.33*	-0.25	-0.05
3	BAJ1 : PN component 1996-2003	0.38*	0.66*	-0.36*
4	BAJ1: Education & PN components 1997-2001	0.38*	0.67*	-0.36*
5	Safe water (PAGER) 1995	-0.12	-0.08	-0.03
6	Safe water (PAGER) 2002	-0.05	0.08	-0.22
7	Social Fund (ADS) 2003	0.03	0.17	-0.15
8	Entraide national 2002	0.16	0.25	-0.16
9	Drought prevention (PNLCES) 2001	0.04	0.16	-0.22
10	Drought prevention (PNLCES) 2002	0.02	0.06	-0.14
11	NGO literacy programs 2002	-0.23	-0.20	-0.001
12	NGO poverty programs 2002	-0.16	-0.05	-0.08
13	PNRR roads 1995-2003	0.004	0.09	-0.17
14	HPNRR roads 1995-2003	-0.16	-0.14	-0.09
15	Health budget 1997/98 (net of salaries)	-0.02	0.12	-0.17
16	Education budget 2001 (net of salaries)	0.18	0.18	-0.05
17	of which investment	0.19	0.16	-0.02
18	of which recurrent net of salaries	0.08	0.16	-0.12
19	All poverty programs 2002	-0.20	-0.05	-0.14

Note: * indicates significance at the 5 % level. Correlations are calculated for variables across 63 to 71 provinces depending on the variable and date. All program spending amounts are per capita and expressed in 2002 prices. Education and health budgets omit spending on personnel salaries. Promotion national does not include BAJ components; "all poverty programs" includes EN, PN as well as the PN spending as part of BAJ1, NGO literacy and poverty programs, PAGER, ADS, PNRR, and drought spending for the year 2002.

Table 5: Program performance in targeting the poor *(DM per capita)*

		Actual mean per capita allocation	Estimated mean amount going to poor	Estimated mean amount going to non-poor	Estimated targeting differential
1	Promotion national 1994	77.9	0	92.7	-92.7
2	Promotion national 2002	87.7	0	104.4	-104.4
3	BAJ1 : PN component 1996-2003	20.2	126.3	0	126.3
4	BAJ1: Education & PN components 1997-2001	17.8	111.3	0	111.3
5	Safe water (PAGER) 1995	28.4	0	33.8	-33.8
6	Safe water (PAGER) 2002	11.9	4.2 (0.3)	13.4 (3.0)	-9.2 (0.5)
7	Social Fund (ADS) 2003	3.9	6.0 (0.7)	3.5 (2.4)	2.5 (0.3)
8	Entraide national 2002	1.2	3.5 (2.2)	0.8 (2.8)	2.7 (1.5)
9	Drought prevention (PNLCES) 2001	119.5	163.3 (1.1)	111.0 (3.2)	52.3 (0.3)
10	Drought prevention (PNLCES) 2002	121.4	148.8 (1.0)	116.0 (3.2)	32.8 (0.2)
11	NGO literacy programs 2002	1.5	0	1.8	-1.8
12	NGO poverty programs 2002	3.6	0	4.3	-4.3
13	PNRR roads 1995-2003	237.8	257.8 (0.7)	233.9 (2.1)	23.9 (0.1)
14	HPNRR roads 1995-2003	83.4	0	99.3	-99.3
15	Health budget 1997/98 (net of salaries)	41.7	37.2 (1.2)	42.6 (6.9)	-5.4 (0.2)
16	Education budget 2001 (net of salaries)	62.6	125.7 (3.3)	50.4 (5.5)	75.3 (1.6)
17	of which investment	42.9	96.6 (3.3)	32.5 (4.4)	64.1 (1.8)
18	of which recurrent net of salaries	19.7	29.1 (2.1)	17.9 (6.3)	11.2 (0.7)
19	All poverty programs 2002	258.1	0	307.2	-307.2

Note: t-ratios in parentheses are based on standard errors corrected for heteroskedasticity. The targeting differential is the difference between the per capita spending amounts going to the poor minus that going to the non-poor. When an amount is negative, it is set to zero when calculating the targeting differential. The amount going to the other group (say the non-poor) is then simply mean per capita spending divided by the non-poor. All DM amounts expressed in 2002 prices. Education and health budgets omit spending on personnel salaries. Promotion national does not include BAJ components; "all poverty programs" includes EN, PN as well as the PN spending as part of BAJ1, NGO literacy and poverty programs, PAGER, ADS, PNRR, and drought spending for the year 2002.

Table 6: Explaining provincial targeting performance

	Public spending programs													
	1	2	3	4	5	6	8	9	11	12	13	14	16	19
Headcount (H) interactions														
constant	0	0	514.5	455.9	0	-56.1	6.7	-784.9	0	0	-2060.4	0	-201.9	0
			(6.0)	(6.0)		(0.8)	(1.1)	(1.1)			(1.1)		(1.2)	
inequality	0	0	682.4	578.6	0	3.3	-42.8	2461.6	0	0	-571.2	0	275.8	0
			(2.1)	(2.1)		(0.0)	(1.5)	(0.9)			(0.1)		(0.5)	
urbanization rate	0	0	-27.5	-29.1	0	-19.5	2.5	-396.3	0	0	483.4	0	-374.3	0
			(0.2)	(0.2)		(0.4)	(0.5)	(1.0)			(0.4)		(1.8)	
rainfall	0	0	-0.2	-0.1	0	0.2	0.01	1.2	0	0	4.5	0	0.04	0
			(2.1)	(2.0)		(2.0)	(0.9)	(1.5)			(1.5)		(0.2)	
literacy rate	0	0	-1105.1	-962.7	0	--	--	--	0	0	--	0	927.5	0
			(2.9)	(2.8)									(2.1)	
1-H interactions														
constant	140.5	219.9	0	0	74.3	44.8	2.2	462.2	-9.9	9.6	824.1	265.1	200.1	649.5
	(1.7)	(2.4)			(2.9)	(2.6)	(1.6)	(3.1)	(1.3)	(2.8)	(2.0)	(2.8)	(5.1)	(4.1)
inequality	-304.7	-408.2	0	0	-66.2	-3.7	7.1	-606.5	12.2	-6.2	1243.3	-412.2	-94.5	-364.4
	(1.6)	(1.8)			(1.0)	(0.0)	(1.4)	(1.2)	(1.3)	(0.6)	(0.4)	(1.9)	(0.8)	(0.7)
urbanization rate	228.2	258.3	0	0	22.0	-5.5	-2.2	-43.7	-2.5	3.1	-328.6	32.8	138.0	97.0
	(2.7)	(3.0)			(1.0)	(0.4)	(1.9)	(0.5)	(0.5)	(1.1)	(1.0)	(0.4)	(2.2)	(0.7)
rainfall	-0.3	-0.4	0	0	-0.1	-0.1	-0.003	-0.4	0.001	-0.01	-1.6	-0.2	-0.1	-0.7
	(2.2)	(2.8)			(2.0)	(2.4)	(1.9)	(2.0)	(0.5)	(2.6)	(1.7)	(1.4)	(1.1)	(3.3)
literacy rate	--	--	0	0	--	--	--	--	21.4	--	--	--	-379.1	--
									(1.2)				(3.0)	
#of observations	65	69	65	65	69	69	69	69	65	69	69	69	65	69
R^2	0.34	0.39	0.67	0.67	0.28	0.51	0.53	0.66	0.22	0.34	0.32	0.25	0.83	0.52

Note: The column numbers refer to the public programs listed in Table 4. Programs with no explanatory variables that are statistically significant at the 10% level are omitted (ADS, drought prevention in 2002 and the Health budget of 1997/8) as are the components of the education budget. t-ratios in parentheses are based on standard errors corrected for heteroskedasticity. When the amount estimated to go to the poor or non-poor is negative in the decomposition presented in Table 5, the variable is set to zero in the regressions reported here.

Table 7: Program performance in targeting the rural and urban poor *(DM/per person)*

		Estimated mean amount going to poor		Estimated mean amount going to non-poor		Targeting differential	
		Rural	Urban	Rural	Urban	Rural	Urban
1	Promotion national 1994	0	0	0	175.4	0	-175.4
					(3.1)		(3.1)
2	Promotion national 2002	0	0	0	200.4	0	-200.4
					(3.2)		(3.2)
3	BAJ1: PN component	256.0	0	0	0	256.0	0
	1996-2003	(6.2)				(6.2)	
4	BAJ1: Education & PN	226.2	0	0	0	226.2	0
	components 1997-2001	(6.2)				(6.2)	
5	Safe water (PAGER)	51.2	0	0	46.1	51.2	-46.1
	1995	(1.5)			(2.4)	(1.5)	(2.4)
6	Safe water (PAGER)	57.8	0	0	12.8	57.8	-12.8
	2002	(6.3)			(3.2)	(6.3)	(3.2)
7	Social Fund (ADS) 2003	17.0	0	2.2	3.1	14.8	-3.1
		(0.8)		(0.4)	(2.3)	(0.6)	(2.3)
8	Entraide nationale (EN)	5.1	0	1.0	0.8	4.1	-0.8
	2002	(1.4)		(1.0)	(3.6)	(0.9)	(3.6)
9	Drought prevention 2001	407.5	0	80.9	105.8	326.6	-105.8
	(PNLCES)	(1.7)		(1.2)	(3.4)	(1.1)	(3.4)
10	Drought prevention 2002	341.6	0	95.2	112.6	246.4	-112.6
	(PNLCES)	(1.1)		(1.1)	(3.0)	(0.6)	(3.0)
11	NGO literacy programs	0	0	0	3.6	0	-3.6
	2002				(2.1)		(2.1)
12	NGO poverty programs	7.1	0	0	6.0	7.1	-6.0
	2002	(1.6)			(2.6)	(1.6)	(2.6)
13	PNRR roads 1995-2003	1312.0	0	0	238.1	1312.0	-238.1
		(4.1)			(2.3)	(4.1)	(2.3)
14	HPNRR roads 1995-2003	129.2	0	27.5	122.1	101.7	-122.1
		(0.5)		(0.3)	(2.0)	(0.3)	(2.0)
15	Health budget 1997/8	153.6	0	7.8	46.9	145.8	-46.9
	(excluding salaries)	(2.0)		(0.4)	(9.1)	(1.5)	(9.1)
16	Education budget 2001	205.6	57.0	33.0	54.7	172.6	2.3
	(excluding salaries)	(2.6)	(1.1)	(1.6)	(4.7)	(1.8)	(0.0)
17	of which investment	147.6	55.4	20.9	35.2	126.7	20.2
		(3.1)	(1.2)	(1.4)	(3.8)	(2.1)	(0.4)
18	of which recurrent	58.0	1.6	12.0	19.5	46.0	-17.9
		(1.5)	(0.1)	(1.3)	(5.7)	(1.0)	(1.0)
19	Total poverty programs	698.4	0	0	377.2	698.4	-377.2
		(3.2)			(3.5)	(3.2)	(3.5)

Note: t-ratios in parentheses are based on standard errors corrected for heteroskedasticity. The targeting differential is the difference between the per household amounts going to the poor minus that going to the non-poor. When an amount is not significantly different from zero, it is set to zero when calculating the targeting differential. DM are expressed in 2002 prices. Education and health budgets omit spending on salaries. Promotion national does not include BAJ components; "all poverty programs" includes EN, PN as well as the PN spending as part of BAJ1, NGO literacy and poverty programs, PAGER, ADS, PNRR, and drought spending for the year 2002.

Table 8: Explaining provincial targeting performance across urban and rural areas

	Public spending program												
	1	2	3	4	6	7	8	10	12	13	15	16	19
Rural Headcount (HR) interactions													
Constant	0	0	663.2	586.2	78.7	-120.4	23.5	-1381.5	-22.1	385.5	423.3	1211.9	-286.4
			(7.7)	(7.5)	(1.8)	(0.7)	(1.2)	(0.5)	(1.3)	(0.2)	(0.9)	(2.2)	(0.4)
Inequality	0	0	772.5	659.7	-47.3	245.2	-63.4	12267.6	-31.3	1078.0	-336.8	-1550.1	1987.0
			(3.8)	(3.7)	(0.7)	(0.9)	(1.3)	(2.8)	(1.9)	(0.4)	(0.3)	(1.5)	(1.2)
urbanization rate	0	0	-31.0	-43.2	298.7	-229.5	-44.8	548.2	-161.1	12057.8	-635.4	--	-4583.6
			(0.1)	(0.2)	(1.0)	(0.4)	(1.8)	(0.2)	(1.6)	(1.1)	(1.1)		(1.2)
Rainfall	0	0	-0.1	-0.1	0.01	-0.1	-0.03	0.7	-0.005	0.9	-0.5	-0.7	0.5
			(1.0)	(1.0)	(0.2)	(0.6)	(1.8)	(0.5)	(0.3)	(0.6)	(1.4)	(1.5)	(0.6)
literacy rate	0	0	-1496.0	-1299.4	-225.7	567.6	43.4	-3016.7	226.8	-4242.8	453.4	-255.9	4045.9
			(3.1)	(3.0)	(0.8)	(1.9)	(1.2)	(0.5)	(2.3)	(0.4)	(0.4)	(0.2)	(1.0)
1-HR interactions													
Constant	0	0	0	0	0	54.0	-6.8	604.9	0	0	-77.4	-418.3	0
						(0.8)	(0.9)	(0.6)			(1.0)	(1.9)	
Inequality	0	0	0	0	0	-61.6	16.9	-2631.3	0	0	191.6	452.6	0
						(0.8)	(1.6)	(2.3)			(0.8)	(1.7)	
urbanization rate	0	0	0	0	0	78.0	-17.4	643.4	0	0	-484.0	697.0	0
						(0.9)	(1.2)	(0.3)			(1.6)	(0.9)	
Rainfall	0	0	0	0	0	-0.01	0.01	-0.2	0	0	0.2	0.2	0
						(0.1)	(1.5)	(0.5)			(1.6)	(1.2)	
literacy rate	0	0	0	0	0	-156.3	-6.5	184.7	0	0	111.2	729.5	0
						(1.2)	(0.4)	(0.1)			(0.4)	(1.6)	
Urban H (HU) interactions													
Constant	0	0	0	0	0	0	0	0	0	0	0	-110.6	0
												(0.1)	
Inequality	0	0	0	0	0	0	0	0	0	0	0	-3042.4	0
												(0.5)	
urbanization rate	0	0	0	0	0	0	0	0	0	0	0	942.0	0
												(0.8)	
Rainfall	0	0	0	0	0	0	0	0	0	0	0	1.0	0
												(1.2)	
Literacy rate	0	0	0	0	0	0	0	0	0	0	0	-1337.8	0
												(1.4)	

Table 8: (continued)

(1-HU) interactions													
Constant	305.1	576.4	0	0	43.7	-3.6	31.6	88.9	42.5	10.4	658.5	-570.8	2149.6
	(1.4)	(2.9)			(1.3)	(0.1)	(2.4)	(0.1)	(2.2)	(0.0)	(2.2)	(0.9)	(2.8)
Inequality	569.8	556.6	0	0	-20.0	-15.5	3.6	375.1	29.6	316.3	180.4	522.7	955.4
	(1.2)	(1.1)			(0.4)	(0.6)	(0.5)	(0.4)	(1.0)	(0.2)	(0.9)	(0.8)	(0.8)
urbanization	962.7	1157.6	0	0	32.2	39.9	-26.2	1075.2	57.9	1624.2	-616.1	831.8	1824.5
rate	(2.1)	(2.4)			(0.9)	(0.5)	(2.0)	(0.6)	(2.7)	(1.8)	(2.2)	(1.3)	(2.4)
Rainfall	-0.4	-0.7	0	0	-0.1	0.005	-0.001	-0.2	-0.01	-1.7	-0.04	-0.1	-1.0
	(2.6)	(3.7)			(1.9)	(0.6)	(0.5)	(0.8)	(1.4)	(1.9)	(1.8)	(1.6)	(2.6)
Literacy rate	-1588.2	-2112.5	0	0	-61.5	-49.4	-8.7	-1725.5	-150.4	-1501.2	-63.7	-382.9	-5386.7
	(1.7)	(2.2)			(1.0)	(1.5)	(1.3)	(2.5)	(2.9)	(0.7)	(0.9)	(2.2)	(2.8)
# of observations	64	65	56	56	56	56	56	56	56	56	56	56	56
R^2	0.50	0.62	0.73	0.73	0.64	0.46	0.61	0.66	0.67	0.52	0.82	0.88	0.80

Note: The column numbers refer to the public programs listed in Table 4. Programs with no explanatory variables that are statistically significant at the 10% level are omitted (PAGER 95, drought prevention in 2001, NGO literacy programs and HPNRR roads) as are the components of the education budget. t-ratios in parentheses are based on standard errors corrected for heteroskedasticity. When the amount estimated to go to one of the four groups is negative in the decomposition presented in Table 8, the variable is set to zero in the regressions reported here.

Table 9: Decomposing levels in total enrolments per capita: 1994 to 2001

Total enrolments per capita in:	overall mean	Poor	Non-poor	R^2	# of observations
Primary school 1994	0.118	0.072 (2.2)	0.126 (19.1)	0.972	64
Primary school 2001	0.142	0.179 (6.0)	0.135 (19.6)	0.976	69
Lower secondary 1994	0.036	0	0.048 (11.4)	0.889	64
Lower secondary 2001	0.055	0.295 (0.9)	0.009 (0.2)	0.222	69
Upper secondary 1994	0.015	0	0.022 (8.8)	0.819	64
Upper secondary 2001	0.021	0	0.037 (3.5)	0.518	69

Note: Enrolments are expressed as a share of the total population. Estimated negative values are set to zero. t-ratios in parentheses are based on standard errors corrected for heteroskedasticity.

Table 10: Decomposing the change in school enrolments by poor and non-poor groups

	Change in enrolments per capita 1994 to 2001					
	(1) Primary	(2) Primary	(3) Lower secondary	(4) Lower secondary	(5) Upper secondary	(6) Upper secondary
H	0.101	0.386	0.376	-1.192	--	
	(2.8)	(5.1)	(1.1)	(1.2)		
1-H	0.008	--	-0.051		0.004	-0.010
	(1.0)		(1.0)		(2.3)	(1.6)
inequality* H		0.291		-2.062		
		(2.1)		(1.4)		
Inequality* (1-H)						0.013
						(1.7)
BAJ spending per		1.7e-4		0.002		1.9e-6
capita		(2.2)		(1.5)		(0.1)
education spending		1.9e-4		0.005		
per capita * H		(0.4)		(1.4)		
education spending						3.6e-5
per capita* (1-H)						(1.6)
primary schools per		-224.9		-642.724		
capita * H		(3.3)		(1.1)		
lower sec.schools		-1829.4		-10606.53		
per capita * H		(1.7)		(1.4)		
lower sec.schools						-145.7
per capita * (1-H)						(2.1)
upper sec. schools						-103.1
per capita * (1-H)						(1.3)
school meals per		0.486				
capita		(3.9)				
school meals per				8.730		
capita * H				(1.4)		
school meals per						0.170
capita * (1-H)						(4.3)
urbanization * H		-0.043		0.901		
		(0.5)		(1.3)		
urbanization * (1-H)						0.013
						(3.0)
literacy rate * H		-0.507		2.596		
		(2.7)		(1.3)		
literacy rate * (1- H)						0.004
						(0.3)
rainfall * H		-5.7e-5		4.8e-4		
		(1.6)		(1.3)		
rainfall * (1- H)						-1.4e-6
						(0.7)
# of observations	64	63	64	63	64	62
R^2	0.52	0.80	0.12	0.45	0.35	0.64

Note: Enrolments are expressed as a share of the total population. H denotes the headcount index. T-ratios in parentheses are based on standard errors corrected for heteroskedasticity

Table 11: Decomposing levels and changes in the share of girls in total enrolments: 1994 to 2001

Share of girls in total enrolments:	Poor	Non-poor	R^2	# of observations
Primary school 1994	0.251 (4.3)	0.433 (37.7)	0.989	64
Primary school 2001	0.389 (17.5)	0.479 (133.9)	0.999	70
Change	0.136 (2.5)	0.045 (4.0)	0.718	64
Lower secondary 1994	0.005 (0.04)	0.466 (26.5)	0.966	64
Lower secondary 2001	0.019 (0.2)	0.512 (19.2)	0.963	70
Change	0.075 (1.7)	0.022 (2.2)	0.376	64
Upper secondary 1994	0.048 (0.4)	0.460 (23.4)	0.958	64
Upper secondary 2001	0.155 (1.0)	0.509 (21.4)	0.944	70
Change	0.095 (1.3)	0.035 (2.7)	0.398	64

Note: Enrolments are expressed as a share of the total population. t-ratios in parentheses are based on standard errors corrected for heteroskedasticity.